

Fig. 30. Galls of *Diastrophus fragariae* Beutm. Upper figure, an immature gall; lower figure, gall from which the producers emerged. (Natural size.)

larval cells in a row, along the petiole, produces a symmetrical swelling quite unlike the irregularly nodular deformity of the *Potentilla* gall. While a cross section of this latter species, at any level, will show several larval cells in the stem pith, just inside the ring of wood, only one will of necessity be cut in a similar section from the strawberry gall.

As the infected leaves wither prematurely, it is difficult to find the mature galls, although the young specimens are quite noticeable. The producers were secured by transplanting host plants so that they could be kept under observation. The galls were removed after the leaves had withered, and were kept on earth, out of doors, during the winter. The producers emerged from May 12-14.

DESCRIPTIONS OF NEW SPECIES OF IPIDÆ (COLEOPTERA).*

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Ips knausi, n. sp.—A large elongate species, length 5.8 mm., width 2.1 mm.; the sides parallel, thickly clothed with long light hairs in front, on the sides and behind. Allied to *emarginatus* Lec., but distinct in the punctuation of the discal interspaces of the elytra, and the characters of the declivity.

Description of the male: The *head* has the front densely

*Contribution from the Entomological Branch, Department of Apiculture, Ottawa.
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granulate-punctate, rather densely hairy, with a wide, shallow, transverse impression between the eyes, and a shining median space towards the vertex; the eyes oblique, very narrow, and broadly emarginate in front; the antennal scape sparsely hairy without, the club wide, marked with three distinct, bisinuate sutures which are densely fringed with long bristle-like hairs; as broadly rounded at the tip as at the base, rather densely punctured below.

The *pronotum* is very slightly longer than wide, 10:9; with the base very broadly rounded; the hind angles broadly rounded; the sides slightly arcuately narrowed or nearly parallel for over two-thirds their length, then obliquely narrowed and slightly bisinuate in front; rounded on the front margin; the asperities of the cephalic half of varying size, the largest more or less concentrically arranged; the caudal half coarsely, closely and deeply, but not roughly punctured; thickly clothed with long hairs in front and about the sides.

The *scutellum* is minute, elongate, faintly channelled and shining.

The *elytra* are parallel for the greater part of the length, then rounded to the strongly produced, dehiscent and submucronate tip; densely clothed with long light hairs about the sides and around the margin of the declivity; with the elytral striae distinctly impressed, narrow, with deeply impressed, closely placed punctures of median size; the sutural striae a little more strongly impressed than the others, strongly divergent and widened behind; the interspaces very wide, not distinctly convex, except the first two, which are also more strongly granulate near the declivity; *the wide interspaces all confusedly punctured*, more sparsely on the disc towards the base, very densely and roughly on the sides and about the declivity; the declivity oblique, deeply concave, with the tip strongly produced; the first tooth, on the second interspace, acute, distinct and preceded by a row of granules; the third interspace with a row of granules at the top of the declivity; the second tooth; on the fourth interspace, large, conical, acute, adjacent but not united to the third; the third tooth very long, wide, compressed, with the sides parallel and the tip deeply emarginate, representing the united teeth of the 5th and 6th interspaces; the fourth tooth smaller than the second, conical, blunt, nearer to the third than

to the acute apical margin; the declivital margin, viewed from the side, straight and vertical from the base of the third tooth to the base of the acute apical margin; the acute apical margin elongated towards the tip so that the apex of the declivity becomes sub-acuminate, and the edge with two deep emarginations on each side; the depth of the declivity closely punctured and dull from numerous minute wrinklins of the chitin, the punctures bearing short, slender hairs throughout. The pubescence is long, light and prominent about the side and margin of the declivity.

The venter is densely punctured and clothed with long hairs.

This species was obtained through the kindness of Mr. W. Knaus. The type bears the labels, Cloudfcroft, 9000 f., N. M., W. Knaus, 8-8-03, 197.

Ips perroti, n. sp.—Description of the type, a male: A slender species, dark reddish-brown in all my specimens; length 4 mm., width $1\frac{1}{2}$ mm., relative proportions, length of pronotum 29, length of elytra 46, width of pronotum behind 27, width of elytra in front 26, width of elytra behind 28.

The *head* has the front convex, somewhat flattened in front, rather closely punctured, more coarsely and roughly towards the eyes, sparsely granulate on the disc, more densely towards the epistoma, with a short, blunt median tubercle on the epistoma, and a row of smaller blunt tubercles along the epistomal margin; the disc rather sparsely clothed with slender hairs, and the epistoma densely fringed as usual; the genæ moderately closely and deeply punctured; the eyes with a very broad, shallow emargination in front; the antennal club with the first two sutures slightly bisinuate at the middle, strongly bent distad at the sides.

The *pronotum* is slightly longer than the width, with the caudal margin strongly rounded; the sides nearly straight and parallel for two-thirds the length, rather strongly narrowed on the distal third and rounded in front; rather densely hairy on the sides and in front, glabrous on the disc; irregularly, not very coarsely asperate in front; smooth and shining behind and finely sparsely punctured, very finely towards the middle line and much more coarsely towards the sides; the median smooth space nearly obsolete, more distinct and somewhat impressed at the middle of the disc.

The *elytra* are one-half longer than the pronotum; a little narrower at the base than the pronotum, very slightly wider behind; the sides nearly parallel for about four-fifths the length, then rounded to the declivity, which is steep and truncate as viewed from above, with the tips dehiscent and slightly tuberculate; the elytral striae regular, distinctly, but slightly, impressed on the disc, except the sutural striae, which are much wider and deeper than the others and widened behind; the lateral striae not impressed; the striae punctures rather small and closely placed, more closely on the first two and the lateral striae; the first interspace convex, finely granulate near the declivity; the second convex, faintly granulate near the declivity; the remaining discal interspaces flat; all the discal striae uniseriately punctured throughout their length, closely towards the declivity, very sparsely towards the base; the lateral interspaces more closely punctured, uniseriately above, confused near the lateral margin, with the punctures nearly as coarse as those of the striae; the *declivity* very abrupt, deeply concave, not closely punctured, more coarsely than the disc; the suture elevated, and smooth on the lower two-thirds; the margin strongly elevated and armed with four teeth on each side; the tooth of the second interspace well developed, acute, recurved, preceded by a few minute granules; that of the third obsolete, or represented by the largest of a row of small granules; those of the fourth and fifth interspaces united at the base, the connecting ridge nearly vertical; the tooth of the fourth interspace acute, recurved; that of the fifth stout, capitate, acute-pointed; the fourth tooth conical, in the type occupying nearly all the short space between the raised apical margin and the third tooth; the raised apical margin wide, moderately produced and entire; the pubescence of the elytra long, erect, fine, rather dense on sides below and about the declivity; the discal pubescence fine and sparse.

The *female type* differs from the above only by the less strongly developed epistomal armature, and the different declivital teeth. The teeth are all acute and less strongly developed than in the male; the second and third teeth are similar in shape, conical, united at the base and but little larger than the first and fourth.

Labels with the male type: I. Perrot, Que. 1912; ♂ 218; ♂ type. Labels with the female type: I. Perrot, Que. 1912, ♀ 218; ♀ type. Host of type series *Pinus resinosa*.

Variations: The pubescence is somewhat abraded on the disc of the elytra in the type; and in some specimens the interstrial punctures of the disc are more numerous; the third discal interspace is frequently impunctate on the basal two-thirds; the frontal tubercle varies greatly in size, being nearly obsolete in some females; the strial punctures of the elytra vary considerably in size; the length varies from 3.5 mm. to 4.25 mm.

This species differs from *tridens*, *borealis*, and *interrupus* by the characters of the front which lie between the much sparser granulation of one sex of *borealis* and the extremely dense granulation of *interruptus*; from *borealis* in the longer, much more finely punctured pronotum, more sparsely punctured elytral interspaces and distinctly much more strongly developed declivital armature; from *interruptus* in the usually much smaller size and more slender form, finer and sparser pronotal punctuation, the much more abrupt declivity with strongly marked sexual variation, and the fewer and smaller granules on the first and second interspaces.

Dryocoetes sechelti, n. sp.— A very small species, with a subcircular, strongly convex pronotum, coarse elytral punctures and a flattened declivity. Length 2.1 mm.; comparative measurements: Pronotum, length 9, width 9; Elytra, length 15, width 9.

The head is more deeply embedded in the pronotum than usual; with the front convex, rather coarsely, closely granulate-punctate, with erect hairs from the punctures; the median carina narrow but distinctly elevated and shining, from epistoma to vertex; the epistomal fringe dense, longer and bright yellow on the middle third; the eyes wide, coarsely granulate and rather broadly emarginate in front; the antennal club much longer than the funicle; the pedicel as long as the outer four segments; the last segment as wide as the last four are long and the second very narrow; the club nearly as wide as long; with the distal densely pubescent part projecting strongly beyond the truncate tip of the basal corneous part which covers about four-fifths of the under surface, and is bounded distally by a distally convex suture, the distal fifth densely pubescent, the basal corneous part with a few

long hairs irregularly placed; the upper surface with the basal half corneous with the distal margin nearly straight, sparsely hairy, the distal half densely pubescent, obliquely subtruncate, with two sutures, the first of which is straight, and the second arcuate.

The pronotum is subcircular, as wide as long, rather strongly produced over the head, very broadly arcuate behind, strongly arcuate on the sides and in front, very strongly convex with the summit slightly behind the centre; very densely, rather finely and somewhat regularly asperate in front of the summit and on the sides behind, coarsely and densely granulate-punctate on the disc behind with the asperities there reduced to granules on the margin of the punctures; the pubescence rather thick and erect, longer in front and on the sides.

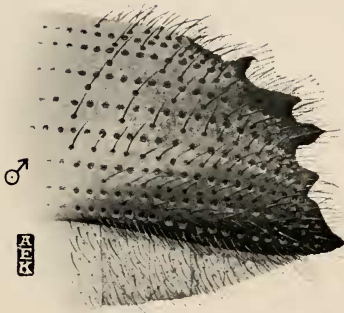
The elytra are as wide as the pronotum, the sides parallel well beyond the middle, then moderately arcuately narrowed and broadly subtruncate behind as viewed from above; the sutural striae wide and rather strongly impressed, the remaining discal striae slightly impressed, the last three on the sides strongly impressed; the strial punctures coarse, deep, subquadrate, and very densely placed; the interspaces a little convex, very little wider than the striae, closely, deeply uniseriately punctured, the punctures deep, but much smaller than those of the striae, a little coarser on the sides than on the disc; the declivity very steep, flattened from above, with the suture elevated, the sutural striae strongly impressed, the second striae distinctly impressed; the strial punctures as coarse as on the disc, the interspaces uniseriately granulate-punctate; rather thickly clothed with erect greyish-pubescence of moderate length. The venter is closely, coarsely, and roughly punctured.

There is no apparent sexual difference in our specimens, but the front is usually entirely retracted.

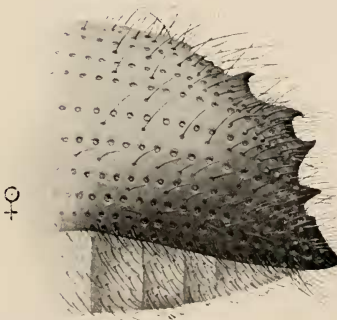
The pronotal asperities are sometimes coarser than in the type and always very dense; the elytral striae from the second outward are in some hardly perceptibly impressed on the disc, although distinctly impressed in the type.

Type locality: Sechelt, B. C., Canada; Type number, 2170.

Dryocoetes pseudotsugae, n. sp.—Description of the *female type*: Length 4.7 mm.; width 1.5 mm.; reddish-brown (not



IPS PERROTI, N. SP.; SIDE VIEW OF THE DECLIVITY OF THE MALE.
ENLARGED. ORIGINAL.



IPS PERROTI, N. SP.; SIDE VIEW OF THE DECLIVITY OF THE
FEMALE. ENLARGED. ORIGINAL.

fully chitinized); closely allied to *septentrionis*, but distinct in the confused small punctures of the interspaces, and the more flattened elytral declivity.

The front is as in *septentrionis*; but more densely granulate and hairy, with the postepistomal smooth space and median pit, and finely carinate above. The *pronotum* is as in *septentrionis*, but usually more densely punctured and more strongly granulate behind on the sides; the median carina narrow, distinct behind. The elytra are much as in *septentrionis*; but much more broadly rounded behind and with the declivity very distinctly flattened when viewed from above, though not so strongly as in *confusus* Swaine and *betulae* Hopk.; with the striae only lightly and narrowly impressed on the disc; the sutural striae rather strongly impressed on the basal third; the strial punctures small and moderately deep; the interspaces wide and flat; the interstitial punctures smaller than those of the striae and rather numerous, uniseriate on the 1st, 2nd and 4th interspaces, on the 3rd and 5th and the outer interspaces confused with usually smaller additional punctures; the declivity shining, distinctly flattened with the first two striae distinctly impressed, the 2nd interspace impressed at the tip, the interspaces on the declivity uniseriately very finely and rather closely granulate-punctate in both sexes.

The *male* has the front very wide, nearly as hairy as in the female, with the median area at the base of the epistoma widely impressed and shining.

Variations: The size is fairly constant, as represented in our collection, the length varying from 4 mm. to 4.8 mm. The most important variation is in the interstitial punctuation. The first, second and fourth discal interstriae are usually uniseriately punctured but often variably confused towards the base and declivity, the other interspaces are usually decidedly confusedly punctured from the base to the top of the declivity with punctures of large and smaller size.

It is apparently a good species, distinct from *septentrionis* by its flattened declivity and confused interstitial punctures.

It is very abundant on the coast of British Columbia in the bark of Douglas fir, and probably occurs also in other conifers. We have specimens from as far north as Inverness and Queen Charlotte Islands.

Type labels: Stanley Park, Vanc.; Douglas fir; 2639.

Phloeosinus pini, n. sp.—A small black species, with the front strongly carinate; the pronotum shining; the declivity without conspicuous sculpture; length 2.5 mm.; width 1.25 mm.

The *head* has the front flattened, densely, coarsely rugulose-punctate, with a fine, acute median carina on the cephalic half; the rugulose area extending backwards across the vertex as a roughly punctured area with its caudal margin converging from the eyes to the middle line on the occiput; the pubescence short, reddish, inconspicuous; the genæ densely punctulate with a few scattered moderate, finely setose punctures; the eyes narrowly emarginate, one-half divided; the antennal club nearly twice as long as wide, with the first two sutures moderately oblique, and with a well developed septum on the dorsal half, the third suture more strongly oblique and indistinct.

The *pronotum* is wider than long, 10.5:8; brightly polished; with the hind margin strongly bisinuate and obtusely angled at the middle; the sides very strongly arcuate on the caudal half, nearly straight on the caudal fourth, then strongly arcuately narrowed so as to be very strongly constricted behind the broadly rounded front margin, the constriction extending across the dorsum as an impression; the disc finely punctured, more densely behind, sparsely in front except along the front margin, coarsely punctured on the sides; the punctures finely granulate, more distinctly so on the sides and in front; the pubescence short and not very distinct; the median line very fine, smooth, more distinct along the middle third. A shallow, oblique impression extends latero-cephalad on the caudal half of the disc.

The *elytra* are wider than the pronotum, 12:10, stout, one-third longer than wide, 16:12 (at the base), one-twelfth wider behind than at the base; the front margins strongly arcuate and serrate, the serrations isolated on the sides; impressed about the minute scutellum; the hind margin, from above, broadly rounded; the striæ very narrow; the strial punctures indistinct, fine and separated; the interspaces very wide, the second interspace much wider at the base, causing the remaining discal striæ to be out-curved at the base; the interspaces slightly convex on the disc,

strongly convex on the sides; strongly rugulose-punctate, with larger transverse, subacute asperities intermixed with numerous smaller granules, the asperities numerous and dense towards the base, becoming uniseriate towards and upon the declivity; the declivital interspaces moderately convex, closely, finely punctured and uniseriately moderately asperate; the second more finely, the third more coarsely and wider; the ninth subcarinate on the sides; the pubescence very short, reddish, stout, stouter and a little more evident on the declivity.

The *male* has the front with a similar rugulose-punctate area, but with the region between the eyes less densely though coarsely rugulose and rather strongly and broadly impressed, with a well developed acute median carina on the cephalic half, ending in a small concave median epistomal lobe as in the female; with an obtuse elevation on each side opposite the middle of the eyes; the pronotum a little more strongly constricted in front, with the sides nearly straight behind; the declivity similar to that of the female, except that the second interspace appears slightly flattened, with the asperities smaller than on the others, and the asperities on the third are less numerous and rather distinctly coarser than those on the first. This may be individual, or may indicate the sexual differences so distinct in other species.

I have taken it only in twigs of *Pinus divaricata*, in the Riding Mountains, Manitoba. The occurrence of *Phloeosinus* in *Pinus* is unusual. Type series number, 2008.

Phloeosinus utahensis, n. sp.—A large species; length $3\frac{1}{8}$ mm., width 2 mm., colour black, with the elytra reddish.

The *head* has the front flattened in the female, densely coarsely rugose-punctate and rather densely clothed with short yellow hairs; with a faint, curved, transverse impression; the eyes narrowly, very deeply emarginate; the genæ rather densely, coarsely punctured; the antennal club elongate with the sutures oblique.

The *pronotum* is one-half wider than long, 16:11, widest behind, the hind margin bisinuate, the sides rounded and strongly narrowed towards the broadly rounded, reddish front margin, moderately constricted near the front with the constriction extending across the dorsum; finely, densely, deeply and evenly punctured

above, with the median carina very fine and nearly obsolete; the pubescence very short and indistinct.

The *elytra* are one-half longer than wide, 25:17.5; slightly wider than the pronotum; the base strongly arcuate, raised and serrate as usual with lunar asperities becoming acute and isolated on the sides; with the striæ narrow, deep, distinctly and closely punctured; the interspaces wide, granulate-punctate and asperate as usual, more densely and coarsely towards the base; the asperities becoming uniseriate behind; the first and third interspaces strongly raised on the declivity, and the asperities as a row of small teeth with granules intermixed; the second interspace convex but less strongly raised, closely punctured and with a row of very few and much smaller points; the reddish pubescence very short, abundant but indistinct, denser, more evident and scale-like on the declivity, with minute slender hairs from the asperate punctures.

The *male* has the front widely and deeply impressed with a median carina on the cephalic half; the pronotum very broadly arcuate on the caudal half, and very strongly narrowed in front, with the median line fine and slightly elevated; the *elytra* with the discal asperities very sparse; but on the declivity the first and third interspaces bear each a regular row of large, compressed, black-tipped teeth; those of the first interspace are strongly compressed, with the distal edge elongate, the anterior angle rounded, the posterior angle elevated and acute, situated on the lateral half of the interspace, the mesal half of which is smooth and finely punctured; those of the third interspace smaller and more numerous than those of the first; the second interspace as wide as on the disc, flat, finely punctured and entirely without asperities; the fifth, seventh and ninth interspaces each with a row of much smaller but very distinct serrations. The pubescence is slightly longer on the declivity and less scale-like.

One male and one female from Stockton, Utah, through the kindness of Mr. W. Knaus. These are probably sexes of the same species, and are distinct from Leconte's type of *serratus*. Type number, 2182.

Phloeosinus hoppingi, n. sp.—A very small species, with the alternate interspaces on the declivity strongly serrate. The length, 1.9 mm.; width, 1 mm.; the colour black, the basal margin

of the elytra, and the declivity reddish-brown, the antennæ and tarsi yellow.

The *head* has the front and vertex shining, moderately, not very closely, rather roughly punctured, rugosely on the sides; with a rather deep transverse arcuate impression and an acute well developed median carina between the impression and the epistomal margin; the pubescence short, erect, not conspicuous except the yellow dense epistomal fringe; the eyes deeply emarginate, the antennal club wide, six-tenths as wide as long, with the first two segments subequal in length and each nearly as long as the outer part, the first two sutures nearly transverse, the third strongly oblique, a strongly chitinized septum shown on the dorsal third of the first and second sutures.

The *pronotum* is wider than long, 6:5; with the hind margin bisinuate; the sides very strongly arcuate behind, strongly arcuately narrowed in front of the middle and bisinuate behind the broadly rounded front margin, widest near the hind margin; the disc rather coarsely, not densely, punctured, not distinctly granulate; the pubescence short, suberect, forming a conspicuous median line of hairs.

The *elytra* are one-third longer than wide, 13:10; the bases arcuate, elevated and serrate; the sides slightly wider at the middle; the striæ deep and moderately narrow; the strial punctures moderately small but distinct; the interspaces convex, closely coarsely granulate-punctuate, and coarsely uniseriately asperate on the disc near the suture and alternately on the declivity; the first interspace asperate only on the hinder half; the second asperate only on the basal half, more coarsely towards the base; the third asperate throughout, more coarsely towards the base; the fifth and seventh interspaces distinctly asperate on the hinder half; the declivity with the alternate interspaces more strongly convex and moderately, rather closely, acutely serrate; the 1st and 3rd punctured on the mesal side with the row of serrations along the outer side; the second interspace on the declivity hardly convex and narrower than the 1st and 3rd; the 9th carinate behind but hardly serrate; the pubescence fine but distinct, larger on the sides, closer and minutely scale-like on the declivity.

The *male* has the front rather coarsely roughly, closely punc-

tured, with the whole central portion broadly and deeply concave, but with the margins of the concavity rounded; the median carina well developed and acute extending from between the eyes to the nearly obsolete epistomal lobe; the pronotum is of the same relative length and width as in the female, but the sides are more nearly parallel behind and more strongly constricted in front; the elytral declivity with the serrations distinctly coarser, with the acute apices directed obliquely caudad.

Seven females and three males from California, received from Mr. Ralph Hopping; taken in "cedar limbs." Type number, 2171.

Phloeosinus vandykei, n. sp.—A small species, with rather sparsely punctured pronotum and deep narrow striae. Length, 2.2 mm.; width, 1.2 mm.

Description of the *female*: The *head* has the front flattened, coarsely, deeply rather sparsely punctured and granulate; with a low acute median carina becoming prominent on the epistoma; the pubescence short, stiff and erect; the antennal club over half as wide as long, 7.5:11, with the first two segments comprising more than one-half the mass; the first two sutures obliquely arcuate, the third more strongly oblique; the septa strongly developed on the first two sutures.

The *pronotum* is wider than long, 5:4; with the base bisinuate; the sides broadly rounded on the hinder two-thirds, and narrowed towards the front; constricted behind the front margin, which is very broadly rounded; the disc rather coarsely, deeply, rather sparsely punctured, the punctures finely granulate; the pubescence fine; the median line very finely faintly carinate behind.

The *elytra* are 1.4 times as long as wide; the bases arcuate, elevated, and coarsely serrate with the lunar serrations becoming coarser, acute, isolated and strongly oblique on the side; the sides somewhat inflated behind; the hind margin broadly rounded as viewed from above; the striae very narrow and deep, those of the disc outcurved towards the base; the striae punctures very small; the interspaces convex, sparsely rather coarsely asperate-punctate; the asperities uniseriate on the declivity, larger, confused and lunar towards the base, strongly oblique and finally longitudinal

towards and upon the sides at the base, moderately confused on the disc and sides except on the third, fifth, seventh and ninth, which are nearly uniseriate; the ninth interspace carinate; the second wider towards the base; the declivity with the first three sutures nearly equal, the first and third hardly elevated, the second not narrower and hardly impressed, but without asperities, the third uniting with the ninth, the fourth met on the declivity by the fifth, sixth, seventh and eighth; the asperities of the declivity uniseriate, fine and acute, and the surface of the interspaces there smoother and more shining than on the disc; the pubescence very fine, short and indistinct. The discal interspaces are frequently nearly uniseriately asperate; the asperities are reduced to fine granules on the sides.

The *male* has the front broadly and rather deeply concave; the pronotum more broadly rounded on the sides and more sharply constricted in front; and has the declivity smoother and more brightly polished, with the serrations nearly obsolete except for a few sparse granules on the third interspace.

Type locality: Huckleberry Meadow, Fresno Co., Calif.

Received through the kindness of Mr. Ralph Hopping. It was taken in "Cedar limbs." Type number, 2173.

Hylastes ruber, n. sp.—Stouter than usual, the pronotum shorter and nearly as wide as the elytra; the elytra with the striae hardly impressed, narrow, the strial punctures small, the interspaces flat and densely, rather coarsely granulate; length, 4.8 mm.; width, 1.75 mm.

The *head* has the front strongly convex, the middle line evenly moderately convex from epistoma to vertex; closely, moderately, rather rugosely punctured; the transverse impression at the base of the beak very faintly indicated; the epistoma moderately impressed on each side; the median carina acute, fine but well developed, extending to the middle of the front; the epistomal lobe wide, concave at the middle with the sides somewhat tuberculate; the pubescence minute and inconspicuous, nearly obsolete.

The *pronotum* is but very slightly longer than wide; broadly rounded behind; the hind angles rounded; slightly arcuate on the